

REMARKS

Entry of the foregoing, reexamination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.114 and in light of the remarks which follow, are respectfully requested.

By the above amendments, claim 6 has been amended for clarification purposes by replacing the term "phosphor mixture solvent" with "phosphor mixture solution." New claim 12 is directed to an additional aspect of the presently claimed invention. Entry of the above amendments is proper at least because a Request for Continued Examination is being filed herewith. See 37 C.F.R. §1.114.

In the Official Action, claims 1, 5, 6 and 10 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,424,467 (*Masuda et al*) in view of an English abstract of Japanese Patent Document No. 52-030276 (*JP '276*). Withdrawal of this rejection is respectfully requested for at least the following reasons.

According to one aspect of the present invention as defined by claim 1, a high-brightness phosphor screen is provided comprising a luminescent material for emitting light of a predetermined color, used for color image display. The luminescent material comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au. The high-brightness phosphor screen also comprises a ZnO:Zn phosphor capable of enhancing the brightness of the display. The mixing ratio of the luminescent material to the ZnO:Zn phosphor is varied according to a desired level of the brightness.

According to another aspect of the present invention as defined by claim 6, a method is provided for forming a high-brightness phosphor screen by mixing a luminescent material for emitting light of a predetermined color and a predetermined amount of a ZnO:Zn phosphor. The method comprises the steps of: (a) preparing a phosphor mixture solution by dispersing the luminescent material and the ZnO:Zn phosphor in a solvent, wherein the luminescent material comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au; (b) forming a phosphor layer by depositing the phosphor mixture solution on a substrate; and (c) evaporating the solvent from the deposited phosphor layer.

Masuda et al relates to a cathode-ray tube, phosphor screen which is formed by a mixture of long persistent phosphor and short persistent phosphor (col. 1, lines 10-12).

Masuda et al does not disclose each feature of aspects of the present invention as defined by claims 1 and 6. For example, *Masuda et al* does not disclose a luminescent material which comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au, as recited in claims 1 and 6. The Patent Office has acknowledged that *Masuda et al* fails to disclose or suggest the above luminescent material (Official Action at page 2).

JP '276 fails to cure the above-described deficiency of *Masuda et al*. That is, like *Masuda et al*, *JP '276* fails to disclose or suggest a luminescent material which comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag,

(Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au, as recited in claims 1 and 6.

In this regard, *JP '276* discloses a ZnS:Ag,Cl fluorescent matter. The Patent Office has asserted that such ZnS:Ag,Cl fluorescent matter of *JP '276* is the same as the (Zn,Cd)S:Ag,Cl phosphor recited in claims 1 and 6. Specifically, the Patent Office has taken the following position at page 4 of the Official Action:

It is to be noted that ZnS:Ag,Cl is the same as (Zn,Cd)S:Ag,Cl since the items in parentheses separated by a comma denotes one or the other (e.g. ZnS:Ag,Cl or CdS:Ag,Cl).

Applicant respectfully but strenuously disagrees with the Patent Office's interpretation of the term (Zn,Cd)S:Ag,Cl recited in claims 1 and 6. The recited (Zn,Cd)S:Ag,Cl phosphor contains both Zn and Cd, and not merely Zn or Cd as alleged by the Patent Office.

The fact that the parenthetical in the term (Zn,Cd)S:Ag,Cl indicates that the phosphor includes both Zn and Cd is shown in the attached copies of "Phosphor Screens," pp.1-5 (*Proxitronic*) and "Luminescent Materials," pp. 137 and 138, 1994 (*Blasse et al*). For example, the table at page 2 of *Proxitronic* shows that phosphors of the composition (Zn,Cd)S:Ag and ZnS:Ag are in fact different phosphors having different light emission and decay time characteristics. As well, *Blasse et al* states that replacing part of the zinc content with cadmium in a ZnS:Ag⁺ phosphor yields a (Zn,Cd)S:Ag⁺ phosphor. In view of the above documents, it is clear that the parenthetical in the term (Zn,Cd)S:Ag,Cl indicates that the phosphor includes both Zn and Cd.

In light of the fact that the recited (Zn,Cd)S:Ag,Cl phosphor contains both Zn and Cd, it is apparent that *JP '276* has no disclosure or suggestion of such a phosphor. In stark contrast

with the present invention, and as discussed above, *JP '276* discloses a ZnS:Ag,Cl fluorescent matter. Moreover, no motivation exists to modify the ZnS:Ag,Cl fluorescent matter disclosed by *JP '276* to yield the recited (Zn,Cd)S:Ag,Cl phosphor.

For at least the above reasons, it is apparent that no *prima facie* case of obviousness has been established. Accordingly, withdrawal of the above §103(a) rejection is respectfully requested.

Claim 11 stands rejected under 35 U.S.C. §103(a) as being obvious over *Masuda et al* in view of *JP '276*, and further in view of an English abstract of Japanese Patent Document No. 11-167868 (*JP '868*). Withdrawal of this rejection is respectfully requested for at least the following reasons.

The deficiencies of *Masuda et al* and *JP '276* are discussed above. Specifically, neither *Masuda et al* nor *JP '276* discloses or suggests a luminescent material which comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au, as recited in claims 1 and 6.

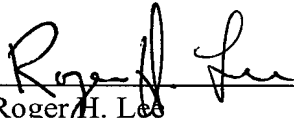
The Patent Office has relied on *JP '868* for disclosing that "the phosphor layer is formed by depositing the phosphor mixture solution on the substrate with the application of electrophoresis, screening, photolithography or precipitation" (Official Action at page 3). However, like *Masuda et al* and *JP '276*, *JP '868* does not disclose or suggest a luminescent material which comprises at least one blue light-emitting phosphor selected from the group consisting of (Zn,Cd)S:Ag, (Zn,Cd)S:Ag,Cl, (Zn,Cd)S:Ag,Cl,Al and (Zn,Cd)S:Ag,Cl,Mg, or a green light-emitting phosphor, (Zn,Cd)S:Cu,Al,Au, as recited in claims 1 and 6.

For at least the above reasons, it is apparent that no *prima facie* case of obviousness has been established. Accordingly, withdrawal of the §103(a) rejection over the combination of *Masuda et al*, JP '276 and JP '868 is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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